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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/772,051 | 01/29/2001 | Kazuhisa Shida | 0941.65172 | 8505 |
| 24978 | 7590 | 05/02/2005 | EXAMINER | |
| GREER, BURNS & CRAIN 300 S WACKER DR 25TH FLOOR CHICAGO, IL 60606 | | | RICKMAN, HOLLY C | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1773 | |

DATE MAILED: 05/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/772,051

Applicant(s)

SHIDA ET AL.

Examiner

Holly Rickman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 6-10, 13, 15 and 16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 8, 9 and 16 is/are rejected.
- 7) ☒ Claim(s) 3, 6-7, 10, 13, 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/23/05 has been entered.

Claim Rejections - 35 USC § 112

2. The rejection of claims 1-3, 5-10, 12-13, and 15-16 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement is withdrawn in view of Applicant's amendments to the claims.

Claim Rejections - 35 USC § 102/103

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-2, 8-9, and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by or, in the alternative, under 35 USC 103(a) as being obvious over Matsuda et al. (US 6623873).

Matsuda et al teaches a magnetic recording medium having a substrate, a first underlayer formed from a CrTi alloy containing 10-26 at% Ti (col. 4, lines 45-49), a second underlayer formed from a Cr alloy containing 16-50 at% of Mo and/or W (col. 5, lines 45-57), an intermediate magnetic layer formed from CoCrPt having a Cr concentration of about 18-24 at% (col. 4, line 63 to col. 5, line 8), and a magnetic recording layer formed directly thereon from a CoCrPtTa or CoCrPtB alloy.

The reference provides a specific example of the invention in column 10, line 53 to col. 11, line 51. In this embodiment, the first magnetic (or intermediate) layer is formed from 67 at% Co-21 at% Cr-12 at% Pt and the second magnetic layer contains 70at% Co-19 at% Cr-8 at% Pt-3 at% Ta. Thus, the Cr concentration is higher in the first magnetic layer as required by the claims. The total content of non-magnetic elements other than Cr having an atomic radius greater than that of Co is greater in the intermediate/first magnetic layer than in the second magnetic layer (i.e. 12at% in the first and 11 at% in the second). The example discloses a CrTi underlayer containing 22 at% Ti but does not disclose the presence of a second underlayer as claimed.

The examiner maintains that one of ordinary skill in the art at the time of invention would have immediately envisaged an embodiment of the invention in accordance with embodiment 2

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described above, further including a CrMo or CrW second underlayer as described in column 5, lines 45-57 of Matsuda's disclosure. Furthermore, the reference teaches that the upper limit of the W and/or Mo concentration in the second underlayer would be 50 at% as noted above and therefore, greater than the total concentration of elements other than Cr in the first underlayer as required by the claims. Thus, the examiner takes the position that a second underlayer is disclosed with sufficient specificity such that the present claims are anticipated.

In the alternative, it would have been obvious to one of ordinary skill in the art at the time of invention to add a second Cr underlayer containing W and/or Mo in an amount of up to 50 at% to the structure described in embodiment 2 of the Matsuda reference since the added layer is known to provide a medium having higher recording density (col. 5, lines 46-62).

Claim 16 requires the same limitations as claim 1, and additionally requires a magnetic head. Matsuda teaches an apparatus which utilizes a magnetic head to read the media at column 6, lines 36-55.

Allowable Subject Matter

6. Claims 3, 6-7, 10, 13, and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The claims are allowable over the closest prior art to Matsuda et al., applied above. With regard to claims 3 and 10, Matsuda et al. fail to teach or suggest the addition of B to the intermediate layer (corresponding to the first magnetic layer) wherein the first and second

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magnetic layers containing B meet the limitation directed to the relative contents of non-magnetic elements other than Cr having atomic radii greater than that of Co.

With respect to claims 6 and 13, Matsuda et al. fails to teach or suggest the presence of a Co-based intermediate layer in between the second underlayer taught therein and the magnetic intermediate layer taught therein (which corresponds to the first magnetic layer set forth in the claims.) The prior art fails to teach or suggest a motivation to add a Co based intermediate layer in addition to a structure which *already* contains a Co based intermediate layer.

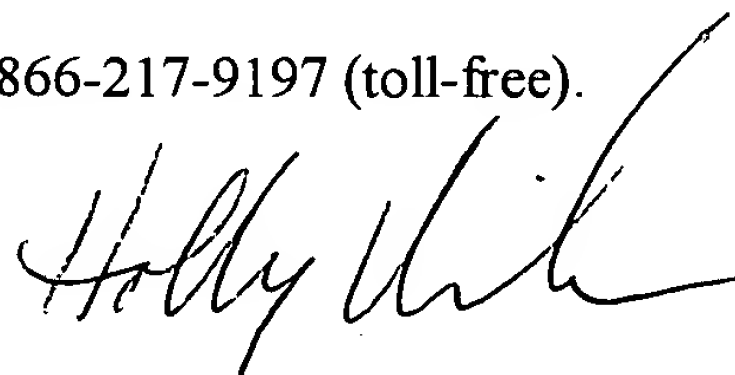
With respect to claims 7 and 15, Matsuda fails to teach or suggest a motivation to use a plurality of second magnetic layers wherein the plural second magnetic layers satisfy the claimed relationship between Cr-contents and sum total contents of non-magnetic elements between adjacent second magnetic layers.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Rickman whose telephone number is (571) 272-1514. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Holly Rickman", with a stylized flourish extending from the end.

Holly Rickman
Primary Examiner
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April 26, 2005